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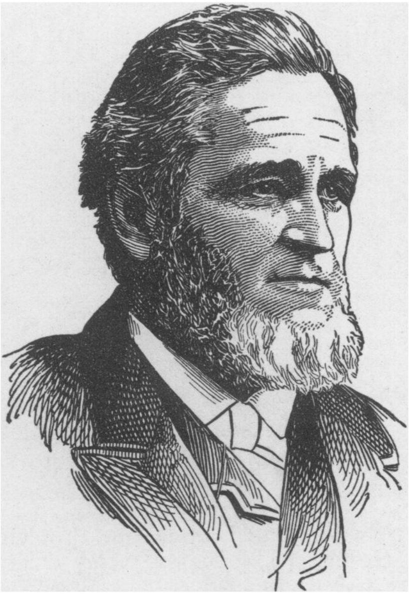
BIOGRAPHY.

PROFESSOR DE VOLSON WOOD.

BY F. P. MATZ.

DE VOLSON WOOD was born near Smyrna, New York, in 1832. To 1852 he enjoyed the educational advantages of the common school, of six weeks in a private academy, and of one term in Cazenovia Seminary. He began teaching public school, in 1849; and in his native town, Smyrna, he taught three terms. In 1853, he was graduated by the Albany (State) Normal School; and during 1853 and '54, he was the Principal of Schools, Napanoch, Ulster county. He was Assistant Professor of Mathematics in the Albany Normal School, 1854-1855; Assistant Teacher and Student, Rensselaer Polytechnic Institute, Troy, 1855-1857; from which Institution he was graduated with the Degree of Civil Engineer (*C. E.*), in 1857; was *honored* by Hamilton College, in 1859, with the Degree *A. M.* He was a Professor in the University of Michigan, from 1857 to 1872; and from this University, he received the Degree of *M. Sc.*, in 1859. He served as Professor of Mathematics and Mechanics in Stevens Institute of Technology, Hoboken, New Jersey, from 1872 to 1885; and in the capacity of Professor of Mechanical Engineering, he is serving this Institute, since 1885.

Professor Wood was a member of the American Society of Civil Engineers, from 1871 to 1885. He has been a member of the American Association for the Advancement of Science, since 1879; and he was the Vice President of this Association, in 1885. Professor Wood is a member of the American Mathematical Society, and an *honorary* member of the American Society of Architects. He has been a member of the American Society of Mechanical Engineers, since 1886; was the *first* President of the Society for the Promotion of Engineering Education; and was the Engineer of the Ore-Dock, Marquette,



DeVolson Wood.

Michigan, in 1864. He is the *inventor* of "Wood's Steam Rock-Drill," 1866 and later; and he is, also, the inventor of other machinery.

Among the articles contributed by Professor Wood, to various magazines, books, etc, may be mentioned: *Alligation*, to the "New York Teacher" —and highly commended in "Brooks's History of Arithmetic;" *Foundations*, in "Johnson's Cyclopedia;" *Mechanics*, in Appleton's Cyclopedia of Mechanics;" *Luminiferous Aether*, in the "London Philosophical Magazine"—and in Van Nostrand's Science Series, No. 85; and *Radiant Heat not an Exception to the Second Law of Thermodynamics*, in the "American Engineer."

Professor Wood has contributed to the "AMERICAN MATHEMATICAL MONTHLY," to the "Michigan Journal of Education," to the "Journal of the Franklin Institute," to the "Railroad Gazette," to the "Mining and Engineering Journal," to the "National Educator," to the "Mathematical Visitor," to the "Analyist," to "Van Nostrand's Engineering Magazine," to the "Educational Notes and Queries," to the "American Engineer," to "Science," to the "Annals of Mathematics," to the "New England Journal of Education," to the "Mathematical Magazine," to the "Engineer," to the "Barnes Educational Monthly," to the "Mathematical Messenger," etc., etc.

Professor Wood is the *author* of the following books: *Trusses, Bridges and Roofs,* published in 1872; *Wood's Edition of Mahan's Civil Engineering*, published in 1873; *Treatise on the Resistance of Materials*, published in 1875; *The Elements of Analytical Mechanics*, published in 1876; *Wood's Edition of Magnus' Lessons in Elementary Mechanics*, published in 1878; *Co-ordinate Geometry and Quaternions*, published in 1879; *Key and Supplement to the Elements of Mechanics*, and *Key and Supplement to the Mechanics of Fluids*, both published in 1884; *Trigonometry*, published in 1885; *Thermodynamics*, published in 1887 and enlarged in 1889; and *Turbines*, published in 1895.

Professor Wood was born, and raised, on a farm. In fact, until he went to the Albany Normal School, in 1852, the farm was his home. He began teaching at the age of seventeen; *paid by teaching*, the expenses of his education, and has been teaching every year since. The only position Professor Wood ever *sought*, was the first one he ever held; and the income during the three months was thirty dollars + the *privilege* of doing all the work from Principal to Janitor + the *obligation* of boarding around.

After he was a graduate of the Rensselaer Polytechnic Institute, he "wended westward" his way—not knowing whither he was going; but while traveling through Michigan, something prompted him to visit the State University. After arriving at Ann Arbor, he called at the office of the President, Dr. H. P. Tappan, who (after *the manner* of these Dignitaries) inquired about his aims and qualifications, and then asked him to teach a few days—until they heard from a recent appointee. He began teaching, that day; and, also, remained fifteen years. During this time, Professor Wood *organized* the Department of Civil Engineering; and this Department has existed since that time. Soon after he began teaching in the Michigan State University, his funds were exhausted; and one day he declared he would write home, if he had five cents;

and just then, at the door of the University Building, he saw a *dime* lying in the sand; quickly he picked it up, and wrote home at once. While Professor Wood was teaching at Napanoch, he was granted a vacation of one week; and during this week, he attended the closing exercises at the Albany Normal School. As he entered the Principal's office, the Principal greeted him thus: "Ah! I was just writing to you and offering you the Assistant Professorship of Mathematics. Will you take it?" The offer of the Assistant Professorship of Mathematics was promptly accepted; and at the opening of the next scholastic year, Professor Wood was a member of the Faculty of the Albany Normal School.

The neighbors used to say: "The stones on Mr. Wood's farm are *covered with figures* which his son, De Volson, had used in the solutions of problems."

Possibly the greatest satisfaction to Professor Wood is the pleasure and success he has had in the class room. Men, years after graduation, have complimented him on his success. They have asked for the *secret* of this success. They have asked him to tell how he inspired with labor—and why students would, in *many* cases, put twice the labor on *his* subjects rather than on the subjects of others—and why he did not *scold* his students—and why he was universally respected by his students, etc.

Brush (of Electric fame), Cleveland, Ohio, says: "Professor De Volson Wood got more genuine study out of me than any other teacher I ever was under."

The civil, mechanical, and electrical, *engineers*, *architects*, railroad *managers* and *presidents*, college *professors* and *presidents*, etc., who formerly were Professor Wood's students and who now are scattered over the whole world, would, if simultaneously "rounded up," form the most intelligent army that ever moved on the face of this mundane sphere.

Some years ago, Professor Wood went to New Mexico—he, also, visited Gunnison, Colorado; and during his visit, he was in only one place in which he could not immediately have been identified at a bank, by one of his former pupils. Stepping off the train at Topeka, Kansas, on his return, he met a former student who had been a passenger on the same train. To him Professor Wood expressed the desire of having cashed a fifty-dollar check. The former student quickly stepped to the ticket-agent, requested him to cash the check, and Professor Wood promptly received the desired fifty dollars.

The books written by Professor Wood have proved of great assistance to science, although no *radical* reforms or changes in them are attempted. Professor Wood has unceasingly sought to make the books written by himself—*his own*; and to that extent, he made them *original*. His books have found desirable places in foreign lands. He is now engaged in *enlarging* his work on Turbines; and he hopes to make it not only rigidly theoretical, but also as practical as the solution of so difficult a problem can be made by a finite mind *working* with its own products—*under the guidance of common sense and reason.*

Professor Wood was married to Miss Cordera E. Crawe, Earlville, New York, in 1859. She died in 1866; and two years after her death, he married

Miss Fannie Hartson, Mexico, New York. By the first marriage, one son was born to them, who died in 1889. The second marriage was blessed with six children, five of whom are living. Professor Wood is a member of the Methodist Church—and, also, a member of the Official Board of the Methodist Church.

NON-EUCLIDEAN GEOMETRY: HISTORICAL AND EXPOSITORY.

By GEORGE BRUCE HALSTED, A. M., (Princeton), Ph. D., (Johns Hopkins), Member of the London Mathematical Society, and Professor of Mathematics in the University of Texas, Austin, Texas.

[Continued from the July-August Number.]

Scholion I. *In which is weighed the attempt of Proclus.* After the theorems so far demonstrated by me, independently of the Euclidean postulate, toward an exact demonstration of which they should all conspire; in my judgment it is well if I diligently weigh the labors of certain well-known geometers in the same endeavor.

I begin from Proclus, of whom Clavius in the Elements after P. xxviii, Book i, gives the following assumption:

If from one point two straight lines making an angle are produced infinitely, their distance will exceed every finite magnitude.

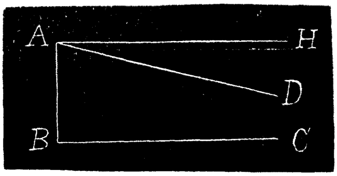


Fig. 20.

But Proclus demonstrates indeed (as Clavius there well remarks) that two straights (fig. 20) as suppose AH, AD going out from the same point A toward the same parts, always diverge the more from each other, the greater the distance from the point A, but not also that this distance increases beyond every finite limit that may be designated, as was requisite for his purpose.

In which place the aforesaid Clavius cites the example of the Conchoid of Nikomedes, which going out from the same point A as the straight AH toward the same parts, so recedes always more from it, that nevertheless only at an infinite production is their distance equal to a certain finite sect AB standing perpendicular to AH and BC produced to infinity toward the same parts.

Why may not the same be said of the two supposed straight lines AH, AD, unless a special reason constrains to the contrary?

Nor here can Clavius be blamed that he opposes to Proklos this property of the Conchoid, which cannot be demonstrated except with the aid of many theorems resting upon the here controverted postulate.

For I say from this itself the force of the Clavian rebuttal is confirmed; for it is certain from this postulate being assumed that truly it follows manifestly, that two lines protracted to infinity, one straight, and the other